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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,071	09/30/2003	Stephen Empedocles	2132.0070002/DJF/TAD	1212
26111	7590	09/14/2005	EXAMINER	
STERNE, KESSLER, GOLDSTEIN & FOX PLLC 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			HESS, DANIEL A	
			ART UNIT	PAPER NUMBER
			2876	
DATE MAILED: 09/14/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/674,071	Applicant(s) EMPEDOCLES ET AL.	
	Examiner Daniel A. Hess	Art Unit 2876	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) 21-67 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-20 is/are allowed.
- 6) ☒ Claim(s) 68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 21-67 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>05/05/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is in response to 7/20/2005 response to restriction requirement.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 68 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase “standard semiconductor fabrication processes” is indefinite because the standard may change over time. For example, what is uncommon and state of the art at the present may become standard in just a year or two.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claim 68 is rejected under 35 U.S.C. 102(e) as being anticipated by Snider et al (US 2004/0041617).

Below, limitations of the instant invention are in italics, followed by a discussion of how Snider et al. teaches the limitation.

68. A method for fabricating a dense, inorganic and oriented nanowire thin film transistor, comprising the steps of:

See firstly figure 6. Wires 80 and 82 are exemplary and are nanowires (see paragraph [0081]). These wires are oriented in the sense that they run parallel to each other. A transistor is formed at each juncture where wires meet.

Regarding the formation of a transistor, Snider et al. teaches [0012]:

“FIGS. 4a-4b depict a special transistor that can be configured at the junction of two crossed wires into one of two states: transistor (FIG. 4a) or a conducting semiconductor wire (FIG. 4b)“

(1) synthesizing semiconductor nanowires;

Clearly the wires must be synthesized.

(2) transferring the nanowires to a substrate;

Planes of wires [0006] are brought together. In this sense, then, the wires on one substrate are transferred to the other substrate.

(3) forming a dense monolayer thin-film with the nanowires substantially aligned in the same direction, and

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In each plane is a single layer of wires which are in the same direction. The layer is clearly dense, because the wires are very small.

(4) using standard semiconductor fabrication processes to form the dense, inorganic and aligned nanowire thin film transistor.

The scope of what fabrication processes fall in the bounds of “standard” is not clear, as has been discussed under 35 USC 112. However, for the sake of examination, the limitation is not given patentable weight. That the transistor is dense is clear from the fact that the wires are nanowires. That transistor is made from silicon / semiconductor materials which are generally inorganic. As the figures show, the wires are parallel, i.e. they are aligned.

Allowable Subject Matter

Claims 1-20 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Snider et al. is an example of art which shows arrays of nanowires in parallel as per claim 1. But lacking is a single conductor line having two segments such that one segment is connected to one end of a film of nanowires and the other segment is connected to the other end of the film of nanowires, with a plurality of gate contacts arranged in such a way as to form a phase shifter.

Instead, the nanowires of Snider et al. act as transistors when crossed with other nanowires running in a perpendicular direction. Nowhere does Snider et al. teach phase adjustment.

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A variety of other art is noted which teaches a transistor-type configuration (i.e. with source, drain, gate electrodes) using nanowires and / or nanotubes. These include Gabriel et al. (WO 2004/040671), Haase (US 2003/0211724), Majumdar et al. (US 2005/0161662), Nihey (US 2004/0238887), Snider et al. (US 2004/0151012) and Snider (US 2004/0149978).

This art also fails to teach or suggest the configuration of a single conductor line having two segments such that one segment is connected to one end of a film of nanowires and the other segment is connected to the other end of the film of nanowires, with a plurality of gate contacts arranged in such a way as to form a phase shifter, as is claimed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel A. Hess whose telephone number is (571) 272-2392. The examiner can normally be reached on 8:00 AM - 5:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Lee can be reached on (571) 272-2398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



DH
8/31/2005

DANIEL STCYR
PRIMARY EXAMINER

